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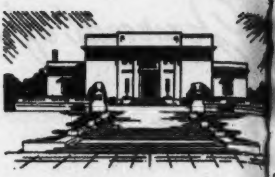
TABLE OF CONTENTS

The Way It Looks to Us 26
Common Cold Medications 28
Sulfa Sale Over the Counter Prosecuted 31
Cream of Tartar Permits Safer Surgery 33
A. PH. A. Laboratory Research Activities 35
A. PH. A. Officers Elected for 1944–45 37
New Uses for Isopropyl Alcohol 38
Foundation Scholarships Offered 40
U. S. P. Supplement Now Available 41
Pharmacists Serve Army Hospital 42
Druggist's Digest 43
Prescription Information Service 45
Winning Pharmacy Week Windows 46
Maryland Freshman Wins Radio Contest 53
With A. PH. A. Branches 55

COVER: Isopropyl alcohol is being used as the menstruum for a crude drug extraction by the laboratory worker in the photograph. Although long familiar to pharmacists, isopropyl alcohol is becoming popular for many new uses due to wartime shortages of ethyl alcohol. It has several advantages which should win it a permanent place in pharmacy.

(*See page 38*)



The Way I

THE PRACTICE of pharmacy will be affected for years by new Selective Service regulations which will reduce professional personnel on three counts: Deferment of pharmacy students is to be abolished, registered pharmacists between 21 and 22 years old will no longer be considered for occupational deferment, and the total of more than 10,000 pharmacists now in service is expected to be upped to 14,000 by year's end.

The new student policy does not hit pharmacy alone; the sweeping limitation on student deferment covers many fields. It was possible to have pharmacy put on the select list of professions and sciences granted deferment for students graduating by July first. But it does not appear likely that continued efforts of the A. PH. A. Committee on Pharmacy War Activities will be able to obtain additional major concessions in the face of military demands for the European invasion.

A few scientific and specialized fields—chemistry, engineering, geology, geophysics and physics—are still granted student deferments for those expected to graduate within 24 months after certification by the colleges. The educational program of even these groups will be drastically curtailed, however, as the combined enrollment has been limited to 10,000 students. This combined quota is only about 1300 less than the number of prewar pharmacy students alone, indicating the inadequacy of replacements which will be provided each group.

Students in medical, dental, veterinary, osteopathic and theological schools will be given consideration for deferment during their professional training. Preprofessional students who have been accepted by professional schools for subsequent training will be deferred up to 50% of peacetime enrollment.

The virtual ban that has been clamped on pharmacy student deferment will probably not make it any tougher for short-staffed pharmacies during the war period but the continued heavy inductions of pharmacists will do so. Most of the students that have been deferred in the past are now in the armed forces. The former student quota largely served to supply pharmacists to the armed forces, produce a postwar reserve and perpetuate the pharmaceutical educational system.

Pharmacy Students Go to War

The reason that pharmaceutical educators now need some of the sedatives they have been teaching their students about is revealed by data collected by the American Association of Colleges of Pharmacy. By the fall of 1943 total enrollment had been slashed to 3456 students, less than two-fifths of the 8787 enrolled at the time of the Pearl Harbor attack. Of the students enrolled last fall only 968 were seniors, most of whom can expect to graduate by the July first deadline.

This may have an even more far-reaching effect on pharmaceutical education than on the practice of pharmacy. With drastically curtailed enrollments, depleted faculties and reduced budgets it is difficult to see how all the pharmacy colleges can survive for the duration under conditions as they now exist. Some of them could only hobble along by catch-as-catch-can methods in peacetime.

The demands of modern pharmaceutical education for highly trained faculties, laboratory and manufacturing equipment, and research facilities cannot be met by all the colleges under present conditions.

It seems unlikely that some of our colleges will be able to maintain even the minimum standards that have been set up. The Council on Pharmaceutical Education may

Looks To Us

then be faced with the unpleasant decision: Shall such schools have their accreditation revoked?

If colleges operating within the same area feel the symptoms of financial starvation and internal decay becoming acute, consolidation may be the most painless cure. Medicine is able to educate its students in about half as many schools proportionately as pharmacy.

College Doors May Close

The mounting pressure on the pharmacy colleges should eventually be relieved somewhat by enrollments from the ranks of the 75,000 war veterans who are now expected to be discharged from active service each month. A great many of these men are released for disabilities which should not prevent them from taking up the study of pharmacy or some other profession after a period of readjustment. Only 171 students per month would be needed from this group to replace the pharmacy students who may enter the armed forces under the new Selective Service regulation.

Men and women returning from service would have increased opportunity for a career in pharmacy under the Thomas bill (S. 1509) now before Congress. The legislation as revised provides that a war veteran who has been relieved of active duty under honorable conditions after at least 90 days of active service is eligible for education at government expense. Tuition and a $50 per month subsistence allowance would be provided for a year's training in the veteran's college of choice provided that entrance requirements are met. At the end of the first year, the veteran could apply for further education up to an additional three years.

Pharmacists should find the measure worthy of support. It would benefit both the veterans and the profession.

The main source of replacements in civilian pharmacies now is the 1142 women students and the 356 men classified as 4-F. Assuming that all these students will graduate in the next three years—which they won't—pharmacists would be available to replace less than a fourth of the estimated 6300 who ordinarily would leave the profession during this period. Death will take its usual toll but the number of retirements may be reduced because of present conditions. In any case it seems certain that another year of war will reduce the number of practicing pharmacists to at least a fifth below the peacetime total of 82,000. That this will produce profound changes in American pharmacy seems equally certain.

One of the most important changes will be that pharmacists, both now and after the war, will be required to devote more of their time in the drugstore to the practice of pharmacy. If these remaining pharmacists are equitably distributed, there is every reason to believe that pharmacy can continue to provide its essential services to the public.

But our colleges, the well of pharmaceutical knowledge, must be kept primed for an expanded training program after the war. Any attempt to lower standards must be condemned, not only for its effect on the profession, but because the half-trained pharmacists would arrive too late with too little.

With the return of peace, pharmacists will also return to ease the manpower shortage. Estimates of the number of additional pharmacists needed to provide pharmaceutical service can then be made without the distorted view caused by temporary war conditions.

Rationale for Dispensing

Common Cold Medications

PHARMACISTS NEED KNOWLEDGE OF MODE OF ACTION OF DRUGS USED IN TREATING THE UPPER RESPIRATORY ILLS, IMPROVES COOPERATION WITH PHYSICIANS TO PROVIDE BETTER THERAPY

by **MELVIN W. GREEN**

CHAIRMAN, PHARMACEUTICAL RECIPE BOOK COMMITTEE

THE GREATEST saboteur of the home front is probably the cold virus. Diseases of the upper respiratory tract cause more loss of man-hours of work than all other diseases together. Serious as this problem is in normal times, during these war times it is of double significance since every man-hour of work lost postpones the day of victory.

Many of the younger physicians have gone into the armed services, leaving a shortage of physicians and a predominance of older practitioners, many of whom have been called from retirement, to take care of the civilians. The pharmacist will find it advisable to keep himself well informed concerning the nature of medication that is used in the treatment of common colds, "flu," grippe and the like, for by having a good background in this field he will be enabled to advise with these physicians and will be in a position to guard the public against the abuse of certain types of self-medication.

Physicians are in the habit of prescribing three types of drugs for these respiratory diseases: expectorants, antipyretics-analgesics and nasal preparations. The use of expectorants has been discussed in the December issue of THIS JOURNAL. The antipyretics and analgesics, most of which are coal tar derivatives, are used to reduce fever, alleviate headache and the soreness of muscles, joints, etc. Nasal preparations are used primarily to aid in draining the areas around the nose. These latter classes of drugs will be discussed in this article.

Heat Regulation.—Body temperature is maintained at a normal level through the equilibrium of heat production and heat dissipation controlled largely by the nervous system. This equilibrium is supposedly maintained by a heat regulating center in the medulla. The body temperature varies within certain limits from day to day and indeed from hour to hour. Nevertheless, if the temperature falls too low, coma and possibly death may ensue; while if the temperature rises too high, delirium is the result. High temperature weakens the patient, places an additional strain on the heart, increases the metabolic rate and produces restlessness, nervousness and delirium. Many physicians believe that fever is a protective mechanism which aids in counteracting the infection and that, consequently, the use of antipyretics is irrational. On the other hand, the fever that goes with this type of respiratory disease is sufficiently weakening that most physicians resort to antipyretics.

Action and Uses of Antipyretics and Analgesics.—The principle antipyretic-analgesic drugs are: acetanilid, acetophenetidin (phenacetin), antipyrine, acetylsalicylic acid (aspirin), sodium salicylate, and aminopyrine. These drugs act by increasing the elimination of heat, an action which takes place in the heat-regulating centers as proved by selective removal of these centers in experimental animals.

In people with normal body temperatures, the antipyretics exhibit relatively no influence over the temperature excepting in very excessive doses.

It should be born in mind that one of the most frequent manifestations of heat loss due to use of these drugs is sweating and that during the period of excessive perspiration, a person is easily chilled. Many persons are apt to take relatively large amounts of aspirin and various "cold capsules" containing aspirin and other antipyretics during the early phases of a cold in order to avoid losing time from work. The pharmacist should caution such people against the danger of becoming chilled during the period of perspiring.

Analgesic Action

The analgesic action of these drugs is apparently due to depression in the thalamic region of the brain. This action is not too well understood, but appears to be milder than the action of morphine. When these drugs are used, the feeling of pain is abolished but not necessarily the perception of pain, for the patient often still responds to pain stimuli by defensive movements, etc., and yet does not "feel" the pain. This is probably due to the pain being shut off at some region of the brain, probably the thalamic region, thus failing to arrive at the higher interpretive centers. These drugs apparently have very little influence on the cerebrum wherein are located the highest interpretive centers. They are not capable of acting as hypnotics, although by alleviating discomfort, sleep may be more readily induced. The drugs in this group are capable of acting synergistically, that is, a mixture of two or more such drugs is frequently more effective than any one of the drugs alone.

These drugs are not so harmless as once thought. Acetanilid and, to a lesser extent, acetophenetidin often produce a marked cyanosis which is presumably caused by a change of the hemoglobin of the blood to an abnormal substance such as methemoglobin or sulfhemoglobin. It must be remembered that many people are sensitive to these drugs, developing a drug rash and other symptoms of mild poisoning.

Many physicians have been in the habit of prescribing caffeine along with the antipyretic drugs on the supposition that it will prevent the depression of the heart and hasten the onset of analgesia. This procedure is probably open to question. Nevertheless, a number of formulas for combinations of this type can be found in the new edition of the *Pharmaceutical Recipe Book*.

Aminopyrine has been demonstrated to be an important contributing factor to the decrease in the number of a particular kind of white blood cells known as granulocytes which play an important role in the immunity process. This factor is so important that the Federal Food and Drug Administration insists that aminopyrine preparations must bear adequate warning labels concerning the possible dangers of white cell disturbances.

The new *Pharmaceutical Recipe Book* contains the formulas for a number of combinations of these analgesic and antipyretic drugs, many of which were taken from the formularies of prominent hospitals. Most of these preparations are in the form of capsules, but some liquid preparations are also mentioned. As an example,

the Mixture of Acetylsalicylic Acid of the British Pharmaceutical Codex has been very popular in England. Acetylsalicylic acid is easily hydrolyzed by water and consequently any such mixture can be stable for only a short time. It should also be pointed out that acetylsalicylic acid is much more soluble in the presence of sodium or potassium citrate, a suggestion which you might convey to your physician if he insists on prescribing this drug in aqueous mixtures. Again it must be pointed out, however, that the dispensing of acetylsalicylic acid in the presence of water is undesirable because of the lack of stability.

When sodium salicylate is employed it is often advisable to use enteric coating to avoid irritation of the stomach. The simultaneous use of sodium bicarbonate is also useful in this regard.

Nasal Medication

Much attention has been given recently to the study of drugs commonly used in the nose. As is well known, one of the means of protecting the mucous membrane of the upper respiratory passages is by the presence of cilia which are little hair-like appendages on the surface of the mucous membrane cells. They are constantly in motion, waving foreign bodies toward the exterior. There is fairly good evidence that solutions which are isotonic interfere to the least extent with the action of the cilia. Hence, it is advisable to call your physician's attention to the fact that the Solution of Ephedrine Sulfate of the National Formulary is an isotonic solution.

It should be pointed out that cocaine hydrochloride in 5 per cent solution does not interfere with the action of cilia, but 10 per cent and 20 per cent solutions bring about a definite but temporary slowing of ciliary activity. One per cent thymol and 0.5 per cent thymol plus 1 per cent eucalyptol inhibit ciliary activity. Solution of Epinephrine Hydrochloride 1:1000 and 2 per cent zinc sulfate have been shown to interfere with the activity of the cilia while silver nitrate in a concentration of 0.5 per cent is immediately fatal to ciliary activity.

From the large number of experiments which have been made by many workers it would appear that the most satisfactory *p*H for comfort and effectiveness of such drugs would be a *p*H as near 7.4 as feasible. It should be recalled, however, that many drugs commonly used in nasal therapy are unstable at alkaline *p*H's. The drugs commonly used in the nose have been observed to have a *p*H from 2.3 to 9.5. Those drugs with a highly alkaline *p*H induce a marked drift toward alkalinity in the *p*H of the nasal secretions, while drugs with a *p*H range of 5.5 to 6.5 (such as Solution of Ephedrine Sulfate of the National Formulary) do not markedly affect the nasal *p*H. Drugs with a *p*H less than 5, on the other hand, induce a noticeable drift in nasal *p*H toward acidity.

There is some evidence that the oil in the oily type of nose drops interferes with the action of cilia. Furthermore, great care must be exercized with oily nose drops to prevent the introduction of liquid petrolatum into the lung which may be responsible for inducing so-called lipoid pneumonia. This is particularly apt to happen in children.

People often lose much of the effectiveness of nose drops by the improper introduction of these preparations into the nostrils. Some people tilt the head back and introduce the nasal solution, permitting it to drain back into the throat thus making it impossible to reach certain areas of the nasal passageway. A better procedure is to tilt the head and introduce the requisite amount of solution into each nostril. The head is then *immediately* lowered until the chin almost rests upon the chest. Gently moving the head to and fro two or three times aids in distributing the medication properly.

The indiscriminate use of nose drops is not without danger. It must be remembered that such aromatic drugs as camphor, menthol, etc., are mildly irritant and their constan use may cause harm.

Vasoconstrictors

Vasoconstrictor drugs are a constituent of many nose drops. When they are used without care in the early stages of a cold, they may cause any infection which is present to find its way into the sinuses by shrinking the tissues at the entrance of the sinuses, thus causing a great deal of harm and discomfort. Furthermore, the prolonged and continuous use of vasoconstrictors may interfere with the proper circulation of the blood in this area and bring about an inadequate nourishment of these tissues.

The pharmacist should warn his customers about the danger of one individual using another's nose-drop bottle and of using nose drops employed during a previous infection of the

upper respiratory tract. In many families, it is common practice for one dropper bottle to be the property of several members of the family. The infection is often carried in this way from one person to another via the nose drops. It is much more advisable to employ dropper bottles solely for one individual and to pour out a small amount of the liquid into a spoon or other suitable receptable, suck up the liquid from the spoon with a dropper and then discard the remainder of the contents of the spoon rather than pour it back into the container. Contamination also may be minimized by taking care that the dropper does not come in direct contact with the nasal tissues.

Each individual should have his own medicine dropper and should never borrow that of another without rendering it sterile.

Inhalers, with and without vasoconstrictors, are employed in nasal therapy. The same dangers from abuse apply to inhalers as to nose drops. If used by more than one person, the inhaler is also a carrier for the spreading of infection.

Another common practice for attempting to clear the nasal passages is the use of a vapor inhalant. Various volatile substances are added to a large container of boiling water and the aromatic vapor given off is inhaled. The new *Pharmaceutical Recipe Book* contains several formulas for both nose drops and vapor inhalants. The following typical formulas are taken from hospital formularies:

BENZOIN INHALANT

Oil of Dwarf Pine Needles,
Compound Tincture of Benzoin, of each an equal volume

Mix.

For use, add 4 cc. or 1 fluidrachm to 1 quart of boiling water for vapor inhalation.

COMPOUND BENZOIN INHALANT

Inhalatio Benzoini Composita

Menthol	30 Gm.
Oil of Eucalyptus	30 cc.
Chloroform	20 cc.
Compound Tincture of Benzoin, a sufficient quantity to make	1000 cc.

Dissolve the menthol in the oil of eucalyptus and chloroform, then add sufficient compound Tincture of Benzoin to make the product measure 1000 cc.

For use, add 4 cc. or 1 fluidrachm to 1 quart of boiling water for vapor inhalation.

General Considerations

There are certain general considerations which the pharmacist should call to the attention of the public. During epidemics and pandemics of "flu" and widespread colds, it is wise for people to stay away from crowded places, since by so doing, nonimmune persons may delay catching the disease until the virulence of the virus has been attenuated by a lessening of the rapidity of its passage through the human host. Persons who have a cold should stay at home, if at all possible, in order to protect themselves from fatigue and others from the possibility of catching the disease. Sneezing and coughing in public without covering the nose is unforgivable. The patient should be not only encouraged to stay at home but to remain in bed. It is generally conceded that a light diet should be used along with plenty of fluids, particularly fruit juices. The fruit juices give additional vitamins to the sufferer and favor an alkaline balance which is claimed by some to shorten the period of attack. A person with a persistent head cold or cough should be encouraged to see a physician, by all means. It must be emphasized that many of the symptoms of a cold or cough may be the early symptoms of some more serious disease.

SULFA SALE OVER THE COUNTER PROSECUTED

OVER the counter sale of a dangerous drug has resulted in a $1000 suspended fine for a pharmacy proprietor in the first case of its kind prosecuted by the Food and Drug Administration. The convicted retailer of Portland, Me., who is not a pharmacist, was placed on probation by the U. S. District Court for one year.

Testimony before the grand jury revealed that the retailer had taken sulfathiazole tablets out of a bottle properly labeled with the prescription legend and dispensed them in an unlabeled box. This made the defendant subject to prosecution under section 301(k) of the Food and Drug law which prohibits "the alteration, mutilation,

destruction, obliteration, or removal of the whole or any part of the labeling of, or the doing of any other act with respect to a food, drug, device, or cosmetic, if such act is done while such article is held for sale after shipment in interstate commerce and results in such article being misbranded." The misbranding charge in this case, therefore, only indirectly involved the "dangerous drug" section 502(f) although the jury laid heavy stress on this point in returning its verdict.

In finding the retailer guilty, the grand jury declared that "from the testimony presented to us by competent medical authorities and public health officials, we the grand jury find that:

"1. Sulfathiazole and other sulfonamide drugs widely used to combat serious infectious diseases are of great value when properly used, but at the same time they are very dangerous when not properly used.

"2. These so-called sulfa drugs are most effective when prescribed for specific diseases in the proper dosage and for the proper period of time.

"3. The use of sulfa drugs other than under the supervision and observation of qualified professional people may not only result in many immediate serious consequences, but may also create a condition in the person using them which will make proper treatment much more difficult or even make subsequent treatment ineffective.

"4. The indiscriminate and unrestricted sale of sulfathiazole and other sulfonamide drugs to the public without adequate directions for use and close medical supervision constitutes a danger to health and is contrary to public welfare and is handicapping the efforts of the Army, Navy and civilian health authorities to protect the nation against the hazards of gonorrhea, a common social problem.

"5. That the indiscriminate and unrestricted sale of sulfathiazole and other sulfonamide drugs to the public is a pernicious practice which should be suppressed."

With these statements, well-informed pharmacists and scientific opinion in other fields are in hearty accord. Investigations by the FDA indicate that most pharmacists are fulfilling this responsibility which the distribution of potent medicaments has placed upon them. Only in a relatively few instances have Food and Drug officials found that pharmacists are willing to make over the counter sales of the drugs which are dangerous for self-medication. Where such practices do persist officials warn that prosecutions will continue.

FDA regulations and the complexity of modern drug therapy tend to make the practice of pharmacy more difficult, but it has been noted that they also tend to raise the level of professional standards and limit the preparation and distribution of drugs to the only qualified agency, the pharmacy.

CHEMICAL BURNS TREATED WITH BUFFER

A neutral phosphate buffer of high concentration is suggested by Drs. Eduard Poser and Erwin Haas of the George Herbert Jones Chemical Laboratory, University of Chicago (*J. A. M. A.*, 123: 630, 1943), as a rapid, safe neutralizing agent for the treatment of either acid or alkali burns.

Reagents commonly used for this purpose are often unsatisfactory, it is pointed out. Solutions must be too dilute to achieve fast, penetrating neutralization, and the *p*H level is often too unphysiologic to be safely used, especially in the treatment of delicate tissues such as those of the eye. Furthermore, different antidotes have been recommended in the past depending on whether the chemical burn was caused by an acid or a base. This made a knowledge of the chemistry of the toxic agent and the case history of the patient indispensable.

To overcome these disadvantages a phosphate buffer solution is prepared as follows:

Monobasic potassium phosphate	70 Gm.
Dibasic sodium phosphate	180 Gm.
Water	850 cc.

Although this is a molar solution with respect to phosphates, Drs. Poser and Haas report that such high concentrations can be used because the phosphates are physiologically occurring substances. The reaction of the solution is neutral, *p*H 7, and the hydrogen-ion concentration will remain in the physiologic range because of the buffering action. Use of the solution to neutralize either acids or bases is illustrated by the following reactions:

$$Na_2HPO_4 + HCl \rightarrow NaH_2PO_4 + NaCl$$
$$KH_2PO_4 + KOH \rightarrow K_2HPO_4 + H_2O$$

Dusting Gloves with
CREAM OF TARTAR PERMITS SAFER SURGERY

POTASSIUM bitartrate should replace talc as a dusting powder for surgical gloves, Drs. M. G. Seelig, D. J. Verda and F. H. Kidd, of St. Louis, recommend (*Jour. Am. Med. Assoc.*, Dec. 11). Pharmacists, and particularly hospital pharmacists, may wish to call the attention of physicians to the many advantages of using potassium bitartrate.

Although talc has long been in ill repute among many physicians because of the serious post-operative hazards its use entails, it is still being used almost universally in preparing gloves aseptically. Once introduced into the animal organism, talc sets up a productive inflammation, the St. Louis surgeons point out, that is permanent and progressive and that may provoke almost insuperable complications. For example, peritoneal adhesions and granulomas often result from the accidental introduction of talc during operative procedures.

That talc contamination is not uncommon is suggested by studies revealing that in 74.4% of all operations some gloves are torn, and 22.6% of all gloves used show rents or punctures.

A successful substitute for talc must have two fundamental characteristics: (1) it must be actually or potentially soluble enough to be absorbed rapidly and completely by the tissues. (2) It must be insoluble enough to withstand steam sterilization without losing that dusting property which serves to prevent the glove surfaces from adhering.

In their search for a substitute powder for troublesome talc, the surgeons studied 24 different powders. With one exception every powder that successfully met the test of steam sterilization produced pathologic lesions in the peritoneal cavities of test animals.

The one exception was potassium bitartrate.

Potassium bitartrate of 210 to 270 mesh seems to powder gloves better than the finer mesh powder. The recommended form is in reality the commercial product, cream of tartar. This powder was found to be readily and harmlessly disposed of by the body tissues and fluids. There were no demonstrable risks related to its use. It has the additional advantage of a certain degree of bacteriostasis, which was demonstrated by the surgeons on agar plate cultures of *B. coli* and *Staphylococcus aureus*.

Pharmacists should warn those in charge of sterilization that the potassium bitartrate must be subjected only to the standard technique of sterilizing rubber gloves—15 minutes of autoclaving under 15 pounds steam pressure. Too much heat or too long exposure discolors and cakes the powder, ruining its dusting effect.

One disadvantage pointed out by those who have tried potassium bitartrate is that the life of rubber gloves tends to be shortened. Tests show that tartrated gloves withstand 7 to 10 sterilizations compared to 12 to 20 sterilizations when talc is used. But the researchers emphasize that this insignificant factor cannot be permitted to weigh against the disadvantages of continued use of talcum.

A. Ph. A. Conducts

WARTIME RESEARCH IN PHARMACY

WASHINGTON LABORATORY TESTS DRUGS FOR U. S. ARMED FORCES; OTHER INVESTIGATIONS DEVELOP NEW STANDARDS FOR FORMULARY

THE AMERICAN PHARMACEUTICAL ASSOCIATION laboratory in Washington, D. C., is playing an important role in wartime pharmacy by conducting tests for the armed forces in coöperation with government agencies, developing new standards for drugs and improving pharmaceutical procedures.

Most of the drugs on the Army medical supply table have been tested in the laboratory for stability at temperatures ranging from 150° F. down to 40 below zero. This work, conducted for the Army Medical Department, is one phase of the Army's program to assure maximum efficiency of drugs so that wherever American pharmacy is now being practiced around the world, pharmacists can dispense drugs comparable to those used for peacetime prescriptions.

Pharmaceutical products should be effective wherever an American fighter needs medication whether it be at the arctic temperatures of the Northland or the tropical heat of equatorial battlegrounds. Like the pharmacist who leaves his prescription case for military practice, drugs for the Army are subjected to a new and changing environment.

From the commercial laboratory a shipment of ointments may be whisked by plane through the subzero stratosphere to be deposited in a hot, humid, supply dump in some tropical war theater. Fluidextracts aboard ship in a meandering convoy may lie for weeks near steam pipes or be subjected to extreme cold as the ships plough through Northern waters. These variable storage conditions have thus made the subject of drug stability one of great importance in military pharmacy.

Complete data on how each drug stood up under the tests at widely varying storage temperatures is available to manufacturers in the *Bulletin of the National Formulary* (Jan.-Feb., 1944).

Of the many drugs used in war areas atabrine has been one of the most important, being used as antimalarial ammunition. The collection of data on the disintegration of atabrine tablets was another bit of war work for the A. PH. A. laboratory, this time conducted at the suggestion of the Division of Medical Sciences of the National Research Council.

Not all of the drugs being tested are American pharmaceuticals. Some unknown prisoner of war or the capture of a medical supply dump provided the A. PH. A. staff with an unexpected glimpse of German pharmacy when NRC's Medical Supplies Committee submitted for analysis a sample of German gauze impregnated with a burn ointment.

Another foreign product—although in this instance from friendly neighbors—came in for scrutiny when South American samples of emetine hydrochloride were submitted for comparison with pharmacopœial standards.

American drug standards have occupied much of the time of A. PH. A. laboratory workers. The results of several of these projects, such as the development of monographs for cinnamaldehyde and propylene glycol, will be found in the Third Supplement to N. F. VII now available to pharmacists on request.

Standards for isopropyl alcohol have also been developed. The increased popularity of ethyl alcohol's chemical cousin (see page 38) apparently makes it certain that isopropyl alcohol will soon be accepted into the official pharmaceutical family.

Much of the A. PH. A. laboratory work this year will be devoted to N. F. problems, as the eighth revision is scheduled for publication in the fall of 1945. Present work indicates that sodium alginate will be one of the new official

RESEARCHERS are shown at work (left) in part of the laboratory of the AMERICAN PHARMACEUTICAL ASSOCIATION, Washington, D. C. Several projects related to the war effort have been completed in the past year. Much of the work in 1944 will be devoted to the eighth revision of the National Formulary.

NOT A REFRIGERATOR but a high-temperature cabinet used for testing the stability of drugs is shown in the photograph. Dr. Melvin W. Green of the American Pharmaceutical Association laboratory is examining preparations from the Army medical supply table which have been subjected to prolonged heating.

drugs. Assays of Ephedrine, Potassium Guiacol Sulfonate, Calamine, Neocalamine, and Theobromine Sodium Salicylate have been studied with the aim of developing modifications that will put more uniform and dependable products on pharmacy shelves.

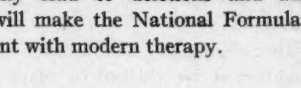
Considerable attention is being given to N. F. standards for culture media. The revision of these standards will be conducted with the collaboration of leaders in the fields of bacteriology and public health. A series of isotonic and buffered ophthalmic solutions is also being developed with the collaboration of other laboratories for possible inclusion in N. F. VIII.

Meanwhile, another class of N. F. preparations has been up for consideration by A. PH. A. researchers. A long series of tests on the lead content of N. F. drugs as found on prescription shelves revealed that contamination varies from less than one part of lead per million to several hundred parts per million. In cases where the lead content is high, it was found to vary greatly from one firm to another and often from batch to batch of the same brand.

Mrs. C. A. Steinmetz, who conducted much of the research on lead contamination, says: "It would appear to be advisable to consider a limit for the lead content of many of the National Formulary drugs and a level of 10 p. p. m. would appear to be a reasonable goal."

An adaptation of the dithizone method for the determination of minute amounts of lead, which has been developed and applied experimentally to 31 N. F. drugs, may point the way to better control through improved tests for purity. The present official heavy metals test is not satisfactory for the detection of lead, Dr. Melvin Green of the A. PH. A. laboratory points out. The dithizone method, in contrast, is considered a simple, rapid method, sufficiently accurate to be used as a limit test for drug standardization. Many drugs would apparently be made available in purer, safer form should the proposed limitations on lead content be adopted.

Current work of the A. PH. A. laboratories also includes the reëxamination of certain official drugs which many clinicians maintain are nearly worthless. Standards for most of these relics of a bygone era in pharmacy and medicine have been retained, not so much because of their intrinsic value, but because they continue to be prescribed rather widely. For this reason, it has been believed that standards for them should be maintained. Present work, however, may eventually lead to deletions and admissions which will make the National Formulary more consistent with modern therapy.



Leeches were distributed in enormous numbers by the *apothecary shops* of a century ago for use in drawing blood. Each of these aquatic annelids withdrew about a half ounce of blood which was stored in its many crops or stomachs, and on which it could live for a year.

A. PH. A. ELECTS OFFICERS FOR 1944–45

GEORGE A. MOULTON, practicing pharmacist of Peterborough, N. H., has been elected president of the AMERICAN PHARMACEUTICAL ASSOCIATION for the 1944–1945 term. Other officers-elect announced by the Board of Canvassers after tabulation of the mail ballot are Charles E. Wilson, practicing pharmacist and state secretary, Corinth, Miss., *first vice-president*; and Robert S. Lehman, retired pharmacist and state secretary, Brooklyn, N. Y., *second vice-president*. Members of the Council elected for a three-year term are Robert L. Swain, pharmaceutical editor of New York, N. Y.; Roy B. Cook, practicing pharmacist and state board secretary, Charleston, W. Va.; and Ernest Little, dean of the New Jersey College of Pharmacy, Newark, N. J.

The president-elect will bring to the office a broad background of experience, both as an association executive and as a practicing pharmacist for the past 26 years. He now operates a modern pharmacy in Peterborough, N. H., with the aid of his wife, who is also a registered pharmacist.

As a member of the New Hampshire Commission of Pharmacy for a decade, and now chairman, Mr. Moulton has been instrumental in obtaining the passage of much legislation for the improvement of New Hampshire pharmacy. He is also executive secretary of the New Hampshire Pharmaceutical Association.

Past offices have given Mr. Moulton a familiarity with many national pharmaceutical activities related to A. PH. A. activities. He has served as second vice-president of the ASSOCIATION, member of the Committee on Long Range Program of Policy, chairman of the Section on Education and Legislation, member of the House of Delegates and member of the Revision Committee of the *Pharmaceutical Recipe Book III*.

This year the president-elect is also vice-president of the National Secretary's Conference. For several years he has been on the executive committee of the National Association of Boards of Pharmacy, and is at present a representative of that organization on the National Syllabus Committee. Mr. Moulton is also active in the National Association of Retail Druggists, now serving on the N. A. R. D. National Legislative Committee.

Mr. Moulton and the other officers-elect will be installed at the next meeting of the ASSOCIATION planned for late summer. The post of second vice-president will probably remain vacant for the 1944–1945 term due to the death of Robert S. Lehman on January 15.

News of the honor that had been accorded Mr. Lehman arrived only a few hours after his death. In 1923 he retired from active practice after operating a professional pharmacy in partnership with his brother for nearly 25 years. His active participation in pharmaceutical organizations, however, continued as long as his health permitted. Mr. Lehman was past-president of several state and local pharmaceutical organizations, long active in the AMERICAN PHARMACEUTICAL ASSOCIATION, and would have brought a wealth of experience and high ideals to the second vice-president's chair of the ASSOCIATION.

PRESIDENT-ELECT GEORGE A. MOULTON

New Uses Develop for

Isopropyl Alcohol

FOR MANY PHARMACEUTICAL USES PROPANOL-2 CAN REPLACE SCARCE ETHYL ALCOHOL, RECOGNITION IN NEXT EDITION OF N. F. EXPECTED

by **LEWIS E. HARRIS**

NORDEN LABORATORIES, LINCOLN, NEBRASKA

ISOPROPYL alcohol was first made in 1855 by Berthelot by absorbing propylene in sulfuric acid with subsequent hydrolysis of the resulting sulfuric acid esters, a process similar to that employed in its industrial synthesis today with the exception that the propylene is now produced by cracking petroleum.

Isopropyl alcohol is a clear, colorless liquid of characteristic alcoholic odor and a slightly bitter taste. It is miscible with water in all proportions and is miscible with chloroform and ether. Its specific gravity at 25° C. is from 0.780 to 0.790. It volatilizes at low temperatures and boils between 81°–83° C.

During the past several years, isopropyl alcohol has gradually replaced ethyl alcohol in many industrial uses such as solvent, extraction, etc. More recently it has had wide use in cosmetic manufacturing and today it shows excellent possibilities of replacing ethyl alcohol in a large number of pharmaceutical products and pharmaceutical manufacturing processes. It is worth while considering the possibility of substituting isopropyl alcohol for ethyl alcohol in many pharmaceuticals since the two alcohols are so similar in their physical properties.

In moderate quantities, isopropyl alcohol does not produce the exhilaration in the human body that is characteristic of ethyl alcohol, hence there is no object in using it as a beverage and it has advantage, therefore, in being free from burdensome governmental control and taxation. Isopropyl alcohol is not only a satisfactory replacement for ethyl alcohol in certain uses but is actually superior in many respects. It also has advantages in having lower surface tension and greater fat solvent action than ethyl alcohol.

For some time isopropyl alcohol has been accepted for certain uses by the Council on Pharmacy and Chemistry of the American Medical Association and included in New and Non-Official Remedies. It is also found in the British Pharmaceutical Codex and, more recently, has been accepted by the National Formulary Committee for inclusion in the next edition of this official compendium.

Antiseptic Action

Isopropyl alcohol has been tested on many bacteria and, in general, found to have a more rapid killing power and to be effective in much lower concentrations than ethyl alcohol. For example, Westerman reported that 50% isopropyl alcohol was equivalent to 70% ethyl alcohol for disinfection when tested on certain staphylococci and streptococci, and Bernhardt found 40% isopropyl alcohol equivalent to 60% ethyl alcohol when used on *B. coli* and *B. subtilis*. Several other investigators have reported similar findings in testing on other organisms. At the University of Michigan Hospital, a 50% solution of isopropyl alcohol is used for preoperative preparation by the surgeon and also on the field of operation.

Pharmacological Aspects

A surprisingly large amount of pharmacological work has been done on isopropyl alcohol and is reported in the literature.

Presented to American Pharmaceutical Manufacturers' Association, New York meeting, 1943.

1. *External Application:*

Both Macht and Boruttau report that shaved areas on dogs, rabbits and rats have been repeatedly sponged with isopropyl alcohol and bandaged without appearance of toxic symptoms, either local or systemic. They also found that when bandages saturated with isopropyl alcohol were worn by men for several days, local effects similar to those produced by ethyl alcohol were apparent. Investigations conducted by Burton-Opitz showed that wounds treated with 50% isopropyl alcohol healed with normal granulations.

Several years ago we carried out an experiment in which applications of both undiluted and 50% isopropyl alcohol were made twice daily to areas of approximately 300 sq. cm. on arms of three persons in the laboratory. This was continued for 25 days with no evidence of skin irritation or absorption.

2. *Oral Administration:*

According to Fuller and Hunter, Loffl and others, many humans have taken from $^1/_2$ to 22 cc. of isopropyl alcohol in strengths comparable to that of wine or whiskey with no evidence of exhilaration or incoördination; however, headaches often resulted after two or three hours. These doses caused little effect on the respiration, the pulse was lowered, and some loss in appetite was noted. Loffl reported that three men took small doses of isopropyl alcohol daily for two days and then increased the dose to 16 cc. daily for several days without harmful effects. The work of Kemal showed that acetone is found in exhaled breath of humans about 15 minutes after the alcohol is administered, and in the urine after one hour.

Several investigators have reported on effects obtained after administration to a variety of animals. Narcosis is produced by doses of 1.5 to 6.0 cc. per kilogram of body weight, depending upon the animal under test. Macht found the minimal lethal dose for cats to be 6 cc. per kilogram body weight, while Munch and Schwartze report 10 cc. per kilogram as a lethal dose for rabbits.

During the past few years we have conducted rather extensive experiments on the pharmacology of isopropyl alcohol. In one series, guinea pigs were each fed 1 cc. per day by administering a 10% solution in divided doses. At the end of 20 days no toxic symptoms were observed and the animals appeared normal on autopsy. Several hundred doses of two fluidrachms of a product containing 12.5% isopropyl alcohol have been administered to horses and cattle without a single toxic reaction. Another product containing 20% has been administered in doses of one-half to one fluidounce to a large number of cattle with no evidence of toxicity.

3. *Intravenous and Subcutaneous Administration:*

Macht reports the lethal dose for cats at $2^1/_2$ cc. of isopropyl alcohol per kilogram of body weight when injected intravenously in a 5% solution, while about 4 cc. per kilogram is the lethal dose for dogs. Burton-Opitz found no narcosis was caused when small quantities were injected subcutaneously into dogs over a period of two days, nor when 10–50% solutions in saline were injected in the jugular vein.

Pharmaceutical Manufacturing

1. *General:*

Extracts of equal or greater alkaloid content are obtained by using 60–70% isopropyl alcohol instead of ethyl alcohol at equal strength when extracting belladonna, aconite, nux vomica and cinchona according to reports by Lauwaet. We have used this alcohol in preparation of certain extracts where the solvent is ultimately evaporated, and find it very satisfactory.

For some time our tablet department has used this alcohol in place of ethyl in preparation of certain granulations. Our research and control laboratories use isopropyl alcohol as a complete substitute for ethyl alcohol in preparing laboratory reagents, standard and staining solutions, tissue section preparation, in washing precipitates, and in drying glassware. Such substitution has proved entirely satisfactory.

2. *Products for External Application:*

Many hospitals have used isopropyl alcohol for some time as an antiseptic for preoperative preparation by the surgeon and also on the field of operation. More recently it has come into wide use in rubbing compounds.

Several years ago we started using isopropyl alcohol in the manufacture of various skin antiseptic products. These products contain from 40 to 70% of this alcohol and contain such other

active ingredients as phenylmercuric nitrate, malachite green and methyl violet. We have found such products to be completely satisfactory. Isopropyl alcohol has also been used satisfactorily for several years as an ingredient of one of our liniment products. Recently we have completed preliminary experiments using isopropyl alcohol in place of ethyl alcohol in Tincture of Iodine and have found such tincture to be almost identical with the official product in so far as physical properties and external use is concerned.

The odor of isopropyl alcohol is somewhat unpleasant to some persons. However, this odor can be satisfactorily covered by prefixation treatment or by use of perfume blends.

3. *Products for Oral Administration:*

In England, isopropyl alcohol has been used in preparation of certain food flavors. Boruttau reports this alcohol is satisfactory for use in mouth washes and that after several months' use it was concluded that no harm need be feared from accidental swallowing of moderate quantities of such product.

To the best of my knowledge, the Food and Drug Administration has not allowed the use of isopropyl alcohol in pharmaceutical products intended for oral administration. However, in view of the pharmacological work which has been reported and the fact that, in most instances, the actual quantity of alcohol consumed in average dosing is quite small, it would appear that the use of isopropyl alcohol in such products would be entirely safe and satisfactory. It only remains for someone to file a new drug application with complete pharmacological and clinical data on such use.

Conclusions

Isopropyl alcohol has advantages over ethyl alcohol in that it has lower surface tension, greater fat solvent action, more rapid killing power on many bacteria, and is free from burdensome governmental control and taxation.

Isopropyl alcohol has been found to be a satisfactory and complete substitute for ethyl alcohol in the preparation of extracts where the solvent is ultimately evaporated, in the preparation of tablet granulations, in pharmaceutical products intended for external use, and in laboratory reagents, standard solutions and staining solutions.

In view of the pharmacological experimental work which has been reported and the fact that, in most instances, the actual quantity of alcohol consumed in average dosing is quite small, it would appear that the use of isopropyl alcohol in many pharmaceutical products for oral use would be entirely safe and satisfactory.

FOUNDATION SCHOLARSHIPS OFFERED COLLEGES

MORE than $350,000 has already been contributed to the American Foundation for Pharmaceutical Education and $1,000,000 has been set as the minimum amount needed to carry out adequately the broad program planned in behalf of American pharmacy.

In addition to the two scholarships granted each accredited college of pharmacy late in 1943, the directors of the Foundation have now approved the granting of two more scholarships to each college, E. L. Newcomb, the foundation's secretary, has announced.

The grants, made possible by representatives of the drug industry, will provide an educational opportunity for about 250 worthy pharmacy students. Colleges of pharmacy are advising high schools that the scholarships are available, and it is believed that the aid of the foundation will help greatly to maintain essential pharmaceutical service and to tide the colleges over the war emergency.

The officers of the American Foundation for Pharmaceutical Education have planned their program to assist in providing adequate, well-trained and reliable personnel to man the nation's pharmacies and to furnish pharmaceutical industries and allied manufacturing concerns, hospitals, governmental agencies, pharmacy college faculties, and other professional fields with technically and scientifically trained personnel.

So far as possible, the Foundation will:

(1) Financially aid the colleges of pharmacy to tide them over this crisis of war emergency;

(2) help worthy colleges to develop strong undergraduate programs;

(3) support graduate work in colleges qualified to carry on such programs in a creditable manner;

(4) encourage scientific research, both as a necessary component of graduate work, and as special projects; and

(5) render general and special help such as the maintenance of scholarship and loan funds for worthy students and the promotion of other projects.

The Foundation will *not:*

(1) Make grants for other than specific purposes:

(2) make contributions to capital deficiencies;

(3) render financial assistance to colleges which do not show fair promise of being able to become established on a sound financial and educational basis and make a worthy contribution to the field of pharmaceutical education.

U. S. P. SUPPLEMENT NOW AVAILABLE

THE FIRST U. S. P. XII Bound Supplement is now available to pharmacists after prolonged delay due to last-minute changes. A copy can be obtained without charge by mailing the order form attached inside the back cover of the Pharmacopœia. The 100-page supplement, which will become official on July first, represents an extensive interim revision.

Thirty-four new monographs are included, many of them especially added for use by the Army and Navy. Six of the U. S. P. XII monographs are completely rewritten and 112 are revised. In addition there are five new assay methods—mostly for vitamins— 25 new reagents and test solutions, and 17 revised reagent standards.

The First Supplement will be included in the Spanish translation of the U. S. P. XII now in page proof, and will soon be distributed to the Spanish-speaking nations of this hemisphere.

Ten new monographs on drugs belonging to the sulfonamide group have been prepared, including those for parenteral administration and those for treatment of bacillary dysentery. Medicinal Zinc Peroxide, important in wound treatment, is also among the new official drugs.

One of the revisions of the standards that delayed issuance of the Supplement is the reduction in quantity of ingredients in the multiple vitamin preparations. Hexavitamin Capsules and Tablets, and Triasyn B Capsules and Tablets will contain only one-half the potency of the tentative standard first prepared. Each capsule or tablet will now supply one-half the average daily requirement. The dose thus provided would usually be adequate to supplement the regular diet, but the physician may easily adjust his prescription to as many units as the patient may require. The potency used in the Supplement is also the potency used by the Army and Navy.

New standards for adhesive absorbent gauze is another revision of especial interest. If the absorbent compress on the adhesive tape is colored and the color is not germicidal or bacteriostatic, it will now be necessary to indicate on the label of each compress that it is not antiseptic. If the added substance is germicidal or bacteriostatic the label must name the agent used.

Although penicillin is not recognized in the First Bound Supplement it is expected that work will soon begin on the development of official standards. Tentative unofficial standards have already been prepared through a coöperative project between penicillin manufacturers and various governmental agencies.

Clouds were first scientifically named and classified in 1803 by an *English pharmacist* named Luke Howard.

In South Pacific

PHARMACISTS SERVE ARMY HOSPITAL

AN ARMY evacuation hospital in the South Pacific area has in its ranks 23 registered pharmacists, 17 of whom are shown in the photograph above. Their laboratory and professional experience has proved invaluable to the unit, which has been evacuating the sick and wounded from the Solomon battle sector.

The following list of the pharmacists includes the place where each one practiced and the name of his alma mater. Shown in the front row of the photograph (*l. to r.*) are Cpl. John H. Ganajian, Mel Vine Drug Store, Los Angeles, University of Southern California; P.F.C. Leroy Smith, Pine Pharmacy, Chicago, University of Illinois; Tech. Sgt. Joseph W. Mauterer, Ligget Drug Company, Detroit, Detroit Tech.; Cpl. Irving I. Goldberg, E. J. Fisher Pharmacy, Detroit, Wayne University; Cpl. James E. Nezamis, The Upjohn Company, Detroit, Ferris Institute; Cpl. Edwin E. Parsons, Crockett Drug Company, Crockett, Cal., University of California.

In the rear row (*l. to r.*) are P.F.C. Tom M. Beverly, Ferguson Bros., Crowell, Texas, Danforth School of Pharmacy; Staff Sgt. Carlos W. Williams, Blackstone Pharmacy, Ft. Worth, Texas; Cpl. Francis Kokrda, Riverview Pharmacy, Omaha, Creighton University; Cpl. Irving A. Rabin, Rabin Drug Company, Chicago, University of Illinois; Cpl. Christian K. Hansen, The Upjohn Company, Milwaukee, Marquette University; Cpl. Claire L. Marshall, Parkview Pharmacy, Kansas City, Mo., Kansas City College of Pharmacy; Sgt. Bernhart L. Nerby, Jr., B. L. Nerby Company, Lake Mills, Iowa, Des Moines College of Pharmacy; Tech. Sgt. Glenn E. Sample, Power City Drug Company, Sioux Falls, S. D., South Dakota State College; Cpl. Theodore A. Sypniewski, Chicago Board of Education, Chicago, University of Illinois; Pvt. Stanley C Weeks, Edelman Drug Company, Torrington, Wyo., Capitol College of Pharmacy; Captain Oscar J. McNabb, McNabb Drug Company, Markesan, Wis., University of Illinois.

Those absent from the picture are Cpl. Henry

M. Gizowski, Stack Drug Company, Chicago, University of Illinois; P.F.C. Donald C. Johnson, Detroit, Ferris Institute; P.F.C. Arthur Leavitt, Wolins Pt. Chemists, New York City, Fordham University; Sgt. Carter B. McBeath, Ford Hopkins Drug Company, Cedar Rapids, Ia., Des Moines College of Pharmacy; Sgt. Robert J. McCauley, Rexall Drug Co., Hill City, Kan., Wichita Pharmacy College; Sgt. Melvin W. Will, Peterson Pharmacy, Oak Park, Ill.

Druggists Digest

OF NEW FORMULAS, RECENT PHARMACEUTICAL DEVELOPMENTS, AND OTHER PROFESSIONAL DATA

FORMULA IS GIVEN FOR LOTION USED IN TREATING GRAIN ITCH

Many farming areas of the United States are apparently well populated with an obnoxious mite called *Pediculoides ventricosus*, which causes the rather widespread disease known as grain itch. This condition is also known as barley itch, grain mite dermatitis, straw itch, mattress itch, hay itch and acarodermatitis urticarioides.

A review of the etiology, diagnosis and treatment of the disease is reported by Dr. George K. Rogers of Phoenix, Ariz. (*Jour. Am. Med. Assoc.*, 123: 887, 1943), as a result of his experience with a local epidemic last year. Pediculoides ordinarily attaches itself to the body of one of various insects upon which it lives as a parasite. When its regular food supply is cut off the mite will feed on any flesh. As it remains attached to human skin for only a short time, Dr. Rogers points out that attempts to destroy the mite are useless. Only simple remedies to control the subjective symptoms are necessary.

Warm demulcent baths, using such substances as oatmeal or linit starch are helpful. These should be supplemented by mild antipruritic lotions. Dr. Rogers suggests the following lotion formula:

Phenol	15 mg
Zinc oxide	1 ʒ
Glycerin	1 ʒ
Lime water	4 ʒ
Rose water, *q. s.*	4 ʒ

Since the symptoms respond so readily to treatment and because the lesions may be mistaken for urticarial types other than that of grain itch, it is believed that the diagnosis probably is often missed.

In infested areas preventive measures should be undertaken through coöperation of farmers and state entomologists. One authority suggests burning the grain stubble in the fall or spring as a means of controlling the insect upon which Pediculoides feeds. To control the itch mite itself, buildings, granaries and surfaces that come in contact with grain and straw may be dusted with powdered sulfur.

INTRAVENOUS AMINOPHYLLINE MUST BE GIVEN WITH CAUTION

Satisfactory results from the use of aminophylline intravenously for cardiac failure and bronchial asthma have been reported recently where epinephrine and other drugs have failed. Its use is not without danger, however, judging from reports of deaths apparently due to aminophylline administered by the intravenous route.

Dr. George Adams of Brooklyn suggests (*Jour. Am. Med. Assoc.*, 123: 1115, 1943) that the treatment should not be used except when safer drugs have failed to give relief. In a statement of interest to hospital pharmacists, Dr. Adams says, "Our hospital rule is that it (aminophylline) may be ordered only by one of the attending staff or by the resident physician, that not more than 0.24 mg. may be used and that it be dissolved in 50 cc. of five per cent dextrose and given by the gravity method over a period of 10 minutes, during which time the doctor should stand by."

OINTMENT HELPS AVOID BURN INFECTIONS; FORMULA GIVEN

Sulfanilamide ointment is suggested by Drs. E. I. Evans and M. J. Hoover of the Medical College of Virginia (*Surg., Gynec. & Obst.*, 77: 367, 1943) as a valuable adjunct to aseptic technique in preventing infection of burns.

In use on 126 patients the ointment seemed to be nontoxic, bacteriostatic, did not inhibit plasma loss, did not injure remaining epithelial tissue or interfere with early epithelization. Sulfanilamide rash appeared in 3 of the 126 cases. The ointment can be prepared for physicians as follows:

Lanolin, sterile	47
Cold cream, sterile	47
Sulfanilamide, sterile powder	6

When a water-dispersible base was used instead of the fatty type, the blood levels of sulfanilamide became dangerously high. Much less toxemia was produced by the recommended ointment than by tannic acid or silver nitrate preparations. Reactions are said to be less severe than when sulfathiazole or sulfadiazine ointment is used.

Before the ointment was applied in the cases reported, the burned area was gently washed with white soap and sterile saline solution under surgical aseptic conditions, then the necrotic tissue was removed. Use of the ointment is followed by application of a pressure dressing and splinting of the burned part of the body. Dressings may be removed in seven to nine days, except in deep second degree burns when further dressings for a like period may be needed.

HOPE REVIVED FOR IMPROVED TREATMENT OF HEART CASES

Combination treatment with heparin and penicillin may be successful against subacute bacterial endocarditis if the results obtained on seven patients is duplicated by more extensive clinical trial. After sensitivity tests, penicillin was given in daily dosages of 40,000 to 200,000 Florey units by continuous intravenous drip, except for one case in which the intramuscular route was used. Heparin was administered in a dosage approximating 300 mg. every second day subcutaneously and 200 mg. daily when it was used as an intravenous infusion.

Uniform sterilization of the blood and relief of clinical manifestations were apparently attained although further observation will be needed to judge the permanence of results, Dr. Leo Loewe, Dr. Philip Rosenblatt, Dr. Harry J. Greene and Mortimer Russell of the Brooklyn Jewish Hospital reported (*Jour. Am. Med. Assoc.*, 124: 144, 1944).

Although this bacterial inflammation of the membrane lining of the heart responds to the experimental use of a chemotherapeutic agent and an anticoagulant, clinical application in the subacute form of the disease has heretofore been disappointing. Use of sulfonamides with or without heparin and the use of penicillin have been largely abandoned. The new combination treatment replaces sulfonamide with penicillin and employs variations on previous techniques.

The use of heparin is not without danger, however, as there have been several reports of cerebral hemorrhage as a sequel to heparin administration in subacute bacterial endocarditis. In a paper published concurrently with that of the Brooklyn physicians, Dr. Louis N. Katz of Chicago and Capt. Stephen R. Elek of the Army Medical Corps conclude from their own experience and that of others that heparin, in fact, should be abandoned in the treatment for subacute bacterial endocarditis.

SOLUTION OF SODIUM LACTATE USED TO TREAT BURN SHOCK

Isotonic sodium lactate solution administered orally may make it possible to combat shock in severe, extensive third degree burns without the use of plasma. Only one death out of 23 successive cases of full thickness burns occurred when the sodium lactate solution was used, Dr. Charles L. Fox, Jr., of New York reports (*Jour. Am. Med. Assoc.*, 124:207, 1944).

Further extensive trials are planned because of the striking results. Obvious military advantages can be foreseen if the innovation proves to be successful. It would also have wide use on the home front because of its cheapness and availability.

The procedure as used at the Harlem Hospital calls for large amounts of solution orally just as soon as the patient has received a morphine hypodermic injection and blood samples are taken.

The solution is prepared by emptying 72 Gm. of sodium lactate syrup into a four-liter bottle and then filling it with cold tap water. As sodium lactate syrup varies in composition, the correct amount should be calculated so that a 1.75% solution results, which is one-sixth molar and isotonic. This method of preparation was used to avoid storage of large quantities of the isotonic solution since it has a tendency to sour.

An exact schedule of fluid intake is essential, Dr. Fox emphasizes. About 7 to 10 liters, or from 10% to 15% of the body weight, is administered within the first 24 hours. A Levine tube may be passed through the nose and connected with a drip device to permit continuous administration. All urine is collected during the treatment, and the fluid intake adjusted to produce about one to two liters of urine daily after the first day.

The method has the advantages of avoiding the burden of intravenous therapy, eliminates the need for sterile solutions, conserves blood and plasma supplies, and is inexpensive.

Further studies may indicate whether small amounts of plasma combined with sodium lactate will be more effective. The study emphasizes the importance of sodium imbalance in the treatment of burn shock, but plasma—besides supplying salt—is also a source of proteins which increase osmotic pressure.

PRESCRIPTION Information SERVICE

BALSAM PERU TROUBLESOME

How can the following prescription be compounded to prevent granulation?

Ammoniated mercury	*25.*
Balsam Peru	*25.*
Zinc oxide oint., q. s.	*100.*

—E. S. Arizona

The incompatibility in the formula is due to separation of resinous material in Balsam of Peru. This usually gives trouble in a greasy base. We suggest that solid petroxolyn be tried which usually carries Balsam of Peru well. Mixing a small amount of castor oil with the Balsam of Peru, adding the balsam to the ointment last, should also produce an acceptable ointment.

AIR AFFECTS SULFA PRODUCT

Carefully prepared aqueous solutions of sodium sulfathiazole for nasal use show precipitation on standing. What procedure do you suggest?—M. *V., Maryland*

Precipitation probably occurs because the water contains carbon dioxide from the air. Boil the water to drive off the gases. During compounding expose the water to air as little as possible. Bottle the preparation immediately in small, tightly stoppered containers. The patient may be instructed to keep the container airtight when the preparation is not in use.

RUBBING ALCOHOL TOO DRYING

We would like a rubbing alcohol formula that is not as drying to the skin as straight alcohol. Glycerin and witch hazel were added in small amounts but did not give a completely satisfactory product.—S. D., Kansas.

Rubbing alcohol compounds now on the market are usually composed essentially of isopropyl alcohol and acetone. The drying effect upon the skin is largely due to the acetone content. Elimination of this ingredient will lessen the difficulty. A trace of castor oil or castile soap should also reduce the drying effect; the quantity used can be adjusted to individual preferences. If ethyl alcohol is available, a 70% dilution is usually not considered too drying.

Judges Choose

1943's Winning Windows

HIGGER'S DRUGS, WASHINGTON, D. C., WINS TROPHY FOR OUTSTANDING PHARMACY WEEK WINDOW DISPLAY

HIGGER'S DRUGS, 5017 Connecticut Avenue, N. W., Washington, D. C., has won the 1943 National Pharmacy Week window display contest. In recognition of the professional display shown in the photograph below, Pharmacist S. F. Higger will receive the Robert J. Ruth trophy, an annual award made possible by the Federal Wholesale Druggists' Association.

First prize in the college division of the contest went to the Southern College of Pharmacy, Atlanta, Ga. First honorable mention in the college class was awarded to Temple University

FILMS HIGGER'S DRUGS VITAMINS
TOILETRIES
PRESCRIPTIONS
BIOLOGICALS
The United Nations
Together fighting the Axis
Together fighting Disease
Drugs from the United Nations to fight with
A few of the hundreds of Crude Drugs needed in medicine and originating in the United Nations

Winner, Retail Pharmacy Class—HIGGER'S DRUGS, WASHINGTON, D. C.

Winner, College Class—SOUTHERN COLLEGE OF PHARMACY, ATLANTA, GA.

National Pharmacy Week
Pharmacists' Part
IN THE WAR
1. REGISTERED PHARMACISTS IN THE PHARMACY CORPS OF ARMED FORCES.
2. OVER 4 TONS OF QUININE FOR USE OF ARMED FORCES.
3. AT HOME IN DOING THEIR PART IN GUARDING PUBLIC HEALTH.

School of Pharmacy, Philadelphia; second honorable mention was awarded the Massachusetts College of Pharmacy, Boston.

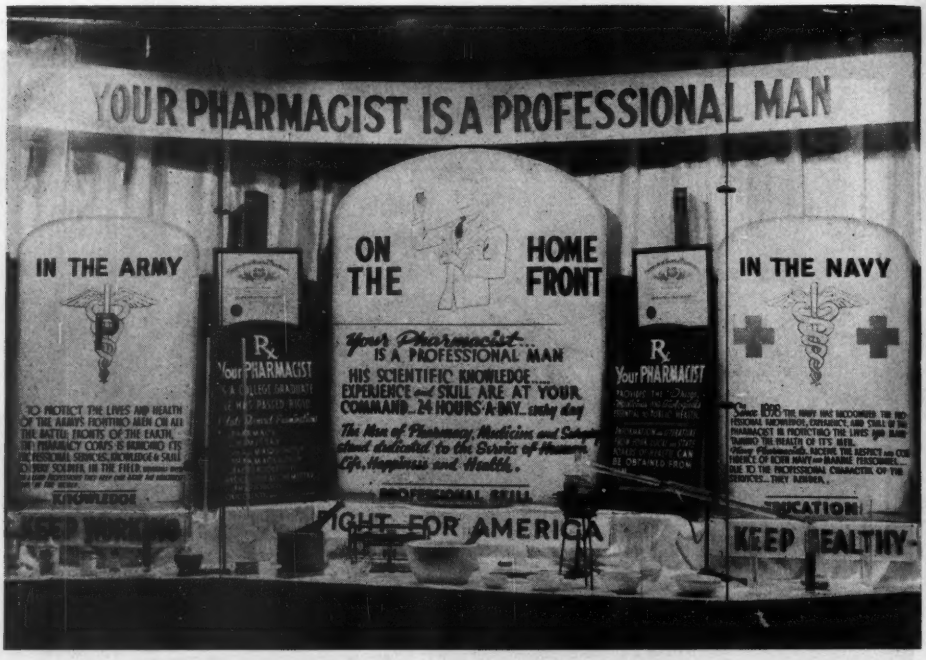
Certificates of merit were won by the following retail pharmacies: *first*, Glenbrook Pharmacy, Glenbrook, Conn.; *second*, Read's Pharmacy, Baltimore; *third*, Kenmore Pharmacy, Boston; *fourth*, Nicholas Edge, Philadelphia; *fifth*, J. W. Holt, Meridian, Miss.; *sixth*, Heinz Drug Company, Salt Lake City; *seventh*, Owens Pharmacy, Jersey City; *eighth*, Reid Drug Company, Athens, Ga.; *ninth*, Paul A. Lyon Pharmacy, New Lisbon, Wis.

The window displays were judged by a special committee consisting of George H. Frates, N. A. R. D. Washington representative; Harold C. Kinner, secretary of the District of Columbia Board of Pharmacy; L. M. Kantner, secretary of the Maryland Board of Pharmacy; Henry W. Heine, Drugs and Cosmetics Section of the War Production Board; and Glenn Sonnedecker, editor of THIS JOURNAL.

The judges commended the nation's pharmacists for the high professional character of their Pharmacy Week window displays and expressed the belief that the over-all quality of the winning windows was even better than in previous contests. Windows were rated on the basis of professional character, value of the message to the public and the arrangement and details of the display.

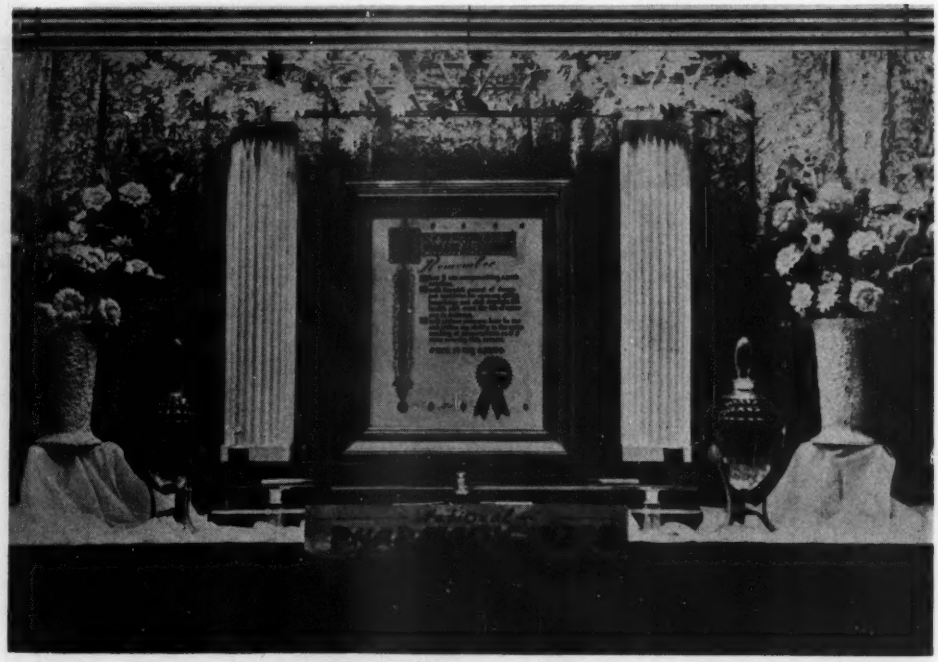
Higger's winning window carries an effective message of the coöperative fight of the United Nations against both the Axis and disease. Above each group of drugs in the display is placed the flag of its native land. The professional symbols in the background highlight the role pharmacy plays in bringing disease-fighting ammunition to our medical allies.

The winning display by the Southern College of Pharmacy tells of the part pharmacists are playing both on the home front and in the armed forces. Dominating the window is the insignia of the new Pharmacy Corps. The reference books and other display materials emphasize the knowledge and integrity which safeguard the public health wherever professional pharmacy is practiced.

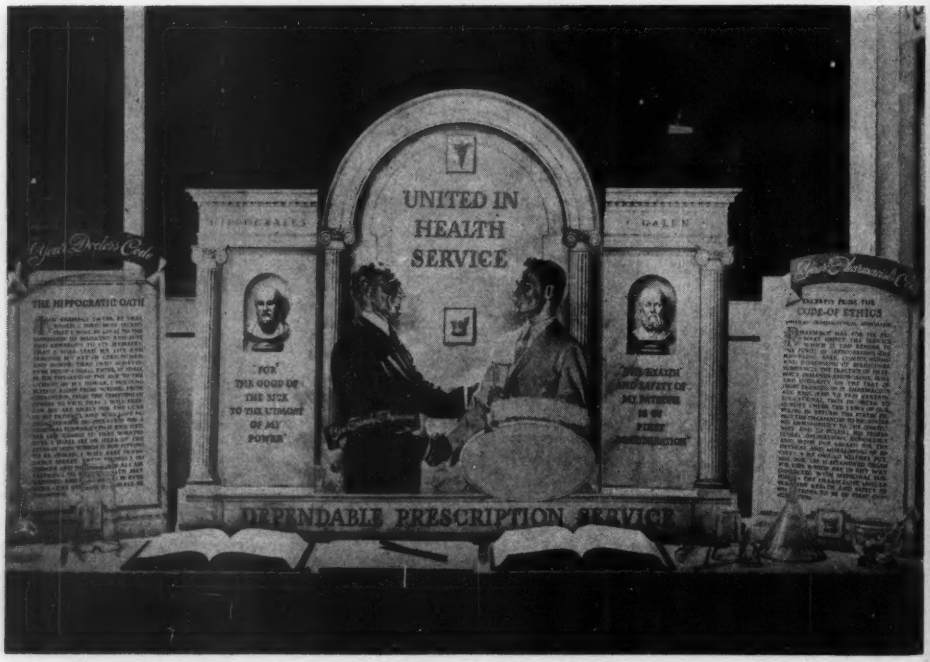


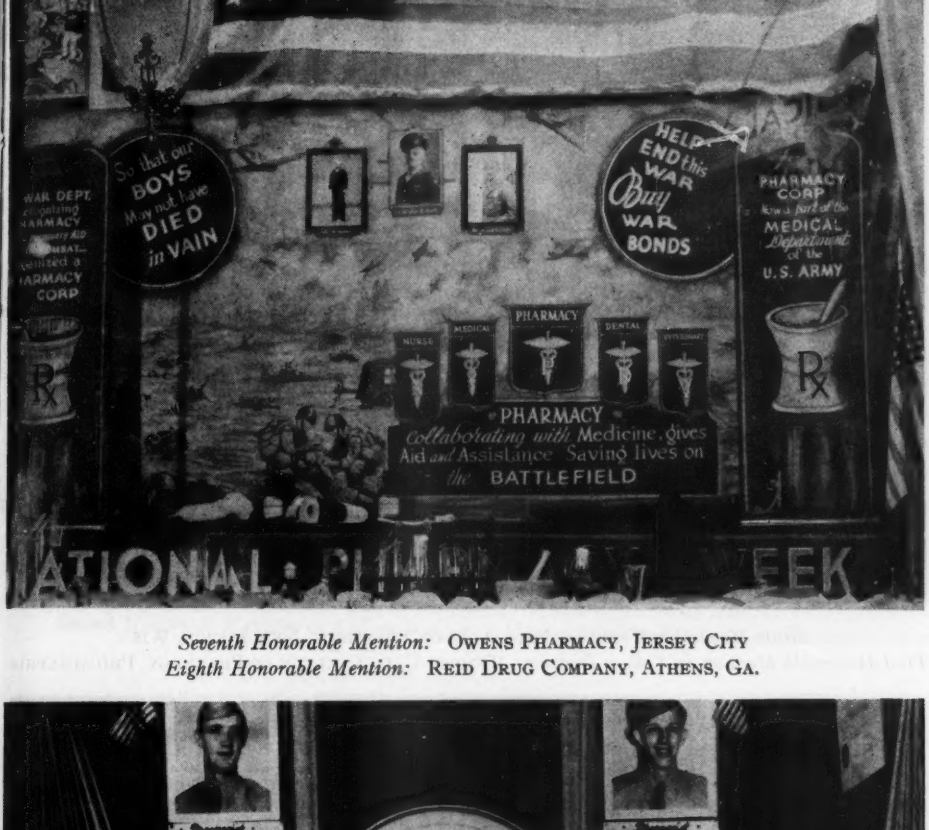
First Honorable Mention: GLENBROOK PHARMACY, GLENBROOK, CONN.
Second Honorable Mention: READ'S PHARMACY, BALTIMORE

Third Honorable Mention: KENMORE PHARMACY, BOSTON
Fourth Honorable Mention: NICHOLAS EDGE, PHILADELPHIA



Fifth Honorable Mention: J. W. HOLT, MERIDIAN, MISS.
Sixth Honorable Mention: HEINZ DRUG COMPANY, SALT LAKE CITY

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MEDICAL Department of the U.S. ARMY
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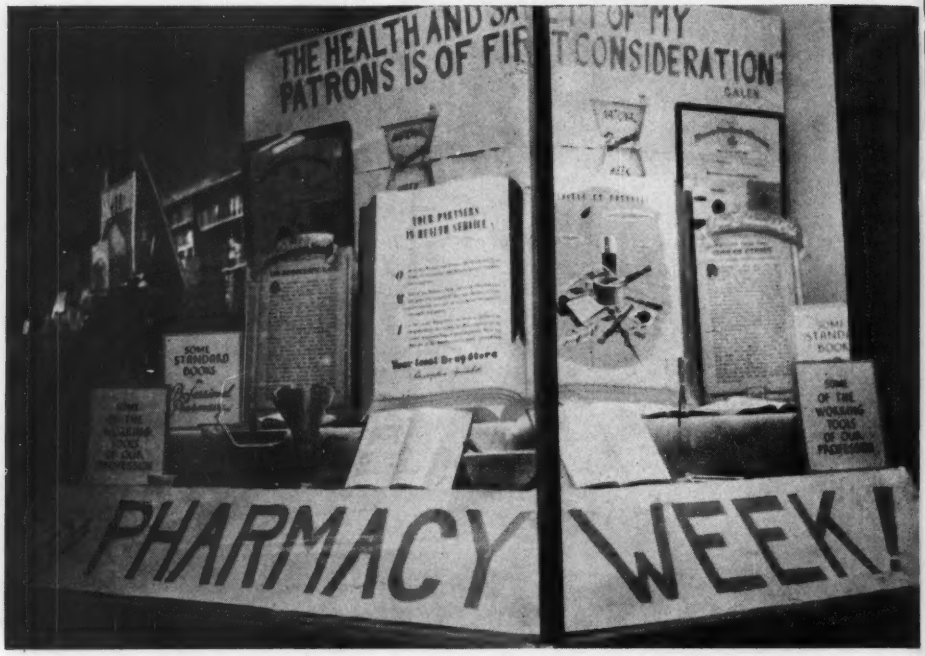
MEDICAL
PHARMACY
DENTAL
PHARMACY
Collaborating with Medicine, gives Aid and Assistance Saving lives on the BATTLEFIELD

Seventh Honorable Mention: OWENS PHARMACY, JERSEY CITY
Eighth Honorable Mention: REID DRUG COMPANY, ATHENS, GA.



Ninth Honorable Mention: PAUL A. LYON PHARMACY, NEW LISBON, WIS.

First Honorable Mention in College Division: TEMPLE UNIV. COLLEGE OF PHARMACY, PHILADELPHIA

Second Honorable Mention in College Division: MASSACHUSETTS COLLEGE OF PHARMACY, BOSTON

MARYLAND FRESHMAN WINS RADIO CONTEST

IRVIN FRIEDMAN, freshman at the University of Maryland College of Pharmacy, has won the student contest for the best radio script based on the professional services of pharmacy. The national contest was a part of the program of the National Pharmacy Week Committee of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Copies of the winning manuscript have been mailed to pharmacy officials throughout the country and additional copies will be sent on request to others who are interested. Address the National Pharmacy Week Committee, 2215 Constitution Ave., Washington 7, D. C. It was originally planned to have the winning script delivered by the author over a nation-wide network during Pharmacy Week, but it was impossible to obtain time on the air during that period.

The prize award, a $25 war bond, is being forwarded to Mr. Friedman. Honorable mention was given to John A. Kahn, Jr., a sophomore at the Indianapolis College of Pharmacy.

Announcement of the radio contest results was made by the special committee of judges composed of George Frates, N. A. R. D. Washington representative; I. A. Tennyson, Maxwell &

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Tennyson Professional Pharmacies; and Glenn Sonnedecker, editor of THIS JOURNAL.

With the award to Mr. Friedman, the Pharmacy Week Committee completed its 1943 program. Plans are already under way for this year's National Pharmacy Week which has been officially designated as November 5 through November 11. An extended program will assure that—as Mr. Friedman put it—"pharmacy is rightfully given a niche in the space of time."

"This niche," Mr. Friedman wrote, "known as National Pharmacy Week, is observed all over the country. It inspires and keeps alive the feeling in the people that when sickness or accident strikes suddenly, adequate agencies throughout our land are ready to meet these emergencies and offer well-trained assistance wherever necessary. It makes people realize more and more that the pharmacist is a professional worker in whom they must have faith, whom they can trust to fill their prescriptions quickly and accurately and whom they can respect for his knowledge and his training. National Pharmacy Week is a stimulant to the profession itself, those related to it, and to the vast public which it serves willingly and unfailingly both night and day."

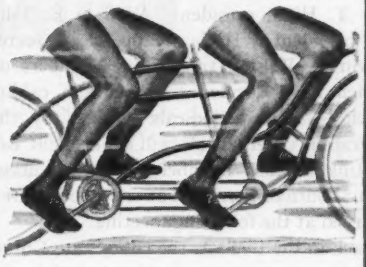
WITH A. PH. A. BRANCHES

NINE new student branches and one local branch were organized during the past year and 998 new student members joined the ranks of A. PH. A., Charles R. Bohrer, the membership chairman, has announced. Active programs promoting the professional objectives of the ASSOCIATION are being planned despite reduced student enrollments and crammed schedules of practicing pharmacists.

At the first meeting of the newly organized branch at the University of Buffalo, James Hill, president of the Buffalo local branch, discussed the problems involved in establishing a professional pharmacy Dr. LaForge addressed the group on the Wagner bill now before Congress. Officers elected for the Buffalo student branch are Harold Troupin, president; I. Meadow, vice-president; Marvin Pleskow, treasurer; and Richard Sherwood, secretary.

The last meeting of the University of Missisippi branch was highlighted by a practical movie de-

TANDEM ACTION



IN
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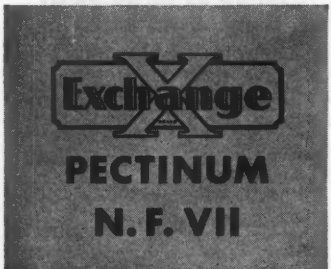
picting "First Steps in First Aid" and a film entitled "Industry for Health," which portrayed the production and distribution of pharmaceuticals with emphasis on the importance of control tests in manufacturing.

The most recent reports to reach A. PH. A. headquarters from the Canal Zone announced the following officers for our southernmost branch: Roy T. High, president; William E. Johnson, vice-president; Hilda Kappelman, secretary; Edwin E. Wilson, treasurer. Members of the branch have decided to procure a cabinet in which to store periodicals received by the organization. Periodicals will be brought to each meeting so that members will have access to them; journals borrowed at one meeting are to be returned at the following meeting.

Back in the U. S. A. the Ohio State University branch announces a membership drive. The activities are now led by Melvin Chambers, president; James Smith, vice-president; and Mary Catherine Enright, secretary-treasurer. The Ohio group has submitted its well-planned constitution and by-laws for possible use as a basis of organization for those setting up new branches. A copy can be obtained from THIS JOURNAL on request.

NOW AVAILABLE



PECTIN for pharmaceutical uses as described in:

1. National Formulary, Seventh Edition, 1942, Page 316.
2. Symposium on Pectin & Pectin Pastes, Bulletin of the National Formulary Committee, Vol. 9, No. 1, Oct. 1940.

Write for Complete Information. Address inquiries to

CALIFORNIA FRUIT GROWERS EXCHANGE

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Copr. 1942, California Fruit Growers Exchange, Products Dept.

In Chicago the local branch program on January 18 featured an address by Lawrence Templeton on "Interpretations of the Federal Food, Drug and Cosmetic Act." A motion picture on malaria was shown during the second part of the meeting.

The Colorado University branch recently heard Alvin Voight of the local chemistry department discuss the art of perfumery. At a later meeting, Paul Taddiken addressed the group on phases of manufacturing pharmacy.

New officers installed at the student branch of St. John's University College of Pharmacy are Alexander Chalm, president; Anthony Friscia, vice-president; Felix Carlucci, treasurer; and Sister Mary Angeline, secretary.

At the January meeting of the Philadelphia local branch, about 100 members heard Dr. George W. Raiziss, director of the Dermatologic Research Laboratories, discuss diasone. The development of this promising new drug was traced from its forerunner, prontosil. Diasone has been found effective in arresting the progress of various types of tuberculosis in animals. Clinical tests on about 100 tuberculous patients obtained good resolution in about 90% of the cases and in these, 40% of the cavities were no longer in evidence by x-ray examination, the branch members were told. In 39% of the cases a 24-hour sputum sample was found negative after 120 days of treatment.

HEPARIN DETOXIFIES DIGITALIS

Heparin, potent anticoagulant, can detoxify digitalis and ouabain and also cobra venom and congo red, Dr. David I. Macht of Baltimore, reported to the meeting of the American Therapeutic Society. While heparin is detoxifying digitalis, it apparently is also losing its own power of preventing blood clotting. Blood from cats receiving digitalis or ouabain clotted in progressively shorter time while the tests were being made.

Some physicians believe, said Dr. Macht, that these findings may also throw some light on hitherto inexplicable coronary thrombosis occurring in heart patients under treatment with full doses of digitalis.

The investigations revealed, in addition, that heparin can prevent anaphylactic shock in guinea pigs given injections of horse serum.